



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

**MEMORANDUM**

**DATE:** February 26, 2019

**SUBJECT:** Review of Storage Stability and Corrosion Characteristic Study for FireWorxx 80, an End-Use Product Containing 44% Caprylic Acid and 36% Capric Acid as Active Ingredients

DP Barcode: 449162  
Decision №: 544631  
Submission №: 1025283  
MRID: 506870-01  
EPA Reg. №: 67702-54  
Chemical Class: Biochemical  
Active Ingredients: Caprylic Acid      Capric Acid  
PC Code: 128919      128955  
CAS RN: 124-07-2      334-48-5  
Type of Review: Product Chemistry

**FROM:** Kathleen Martin, M.S.E.S., Chemist  
Risk Assessment Branch  
Biopesticides and Pollution Prevention Division

KATHLEEN MARTIN  
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Date: 2019.04.09 10:02:04 -04'00'

**THROUGH:** Russell S. Jones, Ph.D., Senior Scientist  
Risk Assessment Branch  
Biopesticides and Pollution Prevention Division

Russell S. Jones, Ph.D.  
Digitally signed by Russell S. Jones, Ph.D.  
Date: 2019.03.18 12:02:31 -04'00'

**TO:** James Parker, Risk Manager  
Biochemical Products Branch  
Biopesticides and Pollution Prevention Division

**ACTION REQUESTED.** Review the Storage Stability (OPPTS 830.6317) and Corrosion Characteristics (OPPTS 830.6320) study submitted by W. Neudorff GmbH KG in fulfillment of a term of registration of the end-use product, FireWorxx 80 (EPA Reg. № 67702-54) on August 24, 2018.

**SUMMARY.** Overall, the study is UNACCEPTABLE because it fails to demonstrate that FireWorxx 80 is compatible with its packaging. Please see the attached Data Evaluation Record for the study review. While the study does not satisfy the Corrosion Characteristics data requirement (OPPTS 830.6320), it does satisfy the Storage Stability requirement (OPPTS 830.6317).

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## DATA EVALUATION RECORD

Russell S. Jones, Ph.D.  
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Date: 2019.03.18 12:03:21 -04'00'

KATHLEEN MARTIN  
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Date: 2019.04.09 10:02:49 -04'00'

Reviewed by: Kathleen Martin, M.S.E.S. N MARTIN  
Secondary by: Russ Jones, Ph.D.

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Type of Study: Storage Stability and Corrosion Characteristics (OPPTS 830.6317 and 830.6320)  
MRID: 506870-01  
DP Barcode: 449162  
Decision №: 544631  
Sponsor: W. Neudorff GmbH KG  
An der Muhle 3  
Emmerthal, 31860  
Germany  
Report Title: FireWorxx 80: Storage Stability and Corrosion Characteristics  
Author: William Gravelle, M.S.  
Study Completed: September 13, 2018  
Testing Facility: Product Safety Labs  
Study ID: 44664  
Confidentiality: No claim of confidentiality  
Good Laboratory Practice (GLP): With a few exceptions, the study was conducted under 40 CFR 160  
Test Material: FireWorxx 80, Lot Number PG8-177-1  
Classification: UNACCEPTABLE

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### METHOD

FireWorxx 80 is an end-use product containing 44% caprylic acid and 36% capric acid as active ingredients; it is packaged in plastic containers. To evaluate its storage stability and corrosion characteristics, Product Safety Labs (PSL) conducted a one-year combined study. Parameters considered in the study include: concentration of active ingredients; physical appearance of the product (e.g., color changes, clumping); physical appearance of the container (e.g., cracking, fogging, discoloration); and, container weight.

To initiate the study, two aliquots were prepared by placing test material in translucent, 250 mL, high-density polyethylene (HDPE) bottles. Observations were made at 0, 3, 6, 9, and 12 months; samples were stored at 16.2 to 27.1°C (61 to 81°F). The concentration of active ingredients was quantified using high performance liquid chromatography (HPLC) with a photometric diode array detector (PDA); method performance (e.g., linearity, precision) was performed under PSL Study 44663. More information on the analytical methods including HPLC operating conditions and chromatograms may be found in the study volume.

## RESULTS

**Concentration of the Active Ingredients.** Table 1 shows the average concentrations at each time interval; Figures 1 and 2 show the same information graphically (the shaded areas indicate the certified limit ranges).

**Appearance of the Test Product.** The physical appearance (pale yellow liquid) of the product did not change over the duration of the study.

**Appearance and Weight of the Container.** The only significant finding was in the appearance of the container. After being stored for three months, the containers became “severely distorted exhibiting a concave, or 'squeezed-in' in appearance;” this remained for the duration of the study. Study investigators suggested that this distortion may be due to “reduction of gas in the container headspace.” Over the 12-month study period, the weight of the container (with sample) decreased less than 0.2 percent.

Table 1 Concentration of Active Ingredients

Time (months)	Concentration (%)	
	Caprylic Acid	Capric Acid
0	43.68	36.75
3	43.04	36.39
6	43.35	36.32
9	43.76	36.20
12	42.25	35.86

Figure 1 Concentration of Caprylic Acid

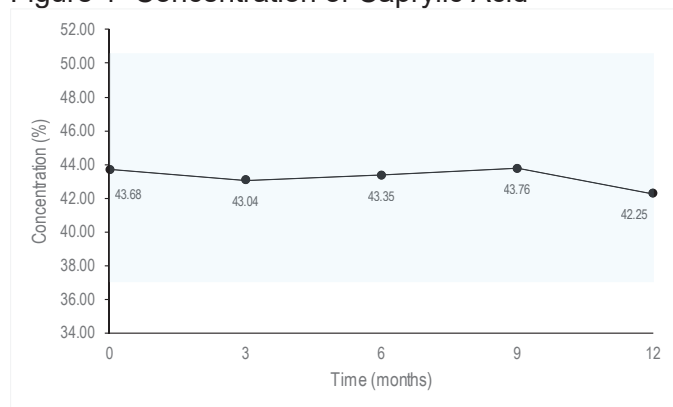
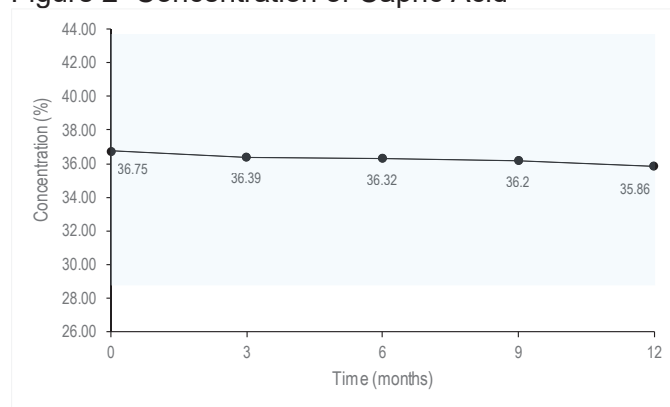


Figure 2 Concentration of Capric Acid



## DISCUSSION AND CONCLUSION

Overall, EPA finds this study to be UNACCEPTABLE because it fails to demonstrate that FireWorxx 80 is compatible with its packaging. The objective of the Corrosion Characteristics Study is “to evaluate effects of the product formulation on the container. If the pesticide is highly corrosive, measures can be taken to ensure that lids, liners, seams or container sides will not be damaged and cause the contents to leak during storage, handling, or use” (OPPTS 830.6320). While no signs of leaking were observed, the Agency is concerned about the severe distortion reported by the study investigators as it suggests that FireWorxx 80 may be incompatible with its packaging. The distortion was seen in both samples, it occurred early in the study, and the containers never returned to their native shapes.

While the Corrosion Characteristics data requirement (OPPTS 830.6320) is not satisfied by this study, the Storage Stability (OPPTS 830.6317) requirement is. When stored from 61 to 81°F (16 to 27°C) for 12 months, the concentrations of caprylic and capric acids are well within the certified limits and thus, the product is considered to be stable. In conducting the study, PSL used appropriate analytical methods and conditions that mimic actual storage.